UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,656	12/06/2000	Marcel Rene Bohmer	PHN 17,812	8075

7590 06/05/2002

Michael E. Marion
Corporate Patent Counsel
U.S. Philips Corporation
580 White Plains Road
Tarrytown, NY 10591

EXAMINER	
COSTANZO, PATRICIA M	
ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 06/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application No. 09/730,656	Applicant(s) BOHMER ET AL.	
	Examiner Patricia M. Costanzo	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Peri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. Claims 1 - 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,258, 334 (Lantz, II).

Referring to Claim 1 (as amended): Lantz, II teaches a semiconductor device (Col. 1, lines 10 –11) comprising:

a substrate (Col. 3, lines 31 – 32); and

a semiconductor element (Col. 1, lines 10 –11) and at least one security coating (Col. 1, lines 54 – 58) provided, the at least once security coating including powdery fillers (Col. 3, lines 14 – 15 teach a combination of fillers and line 20 teaches using powdered particulates) incorporated in a matrix;

wherein a difference between the refractive index of a first powdery filler (Lantz, II teaches the use of metallurgical oxides, such as TiO_2 at lines 24 – 28 and 57 - 59, Col. 2) and that of the matrix (Lantz, II teaches the use of, silica precursor, lines 59 - 62, Col. 1) is at least 0.3 (Applicant admits that the difference between the refractive index of a powdery filler such as titanium oxide and that of the matrix, which can be a silica precursor resin is of the order of 0.3 starting on line 32 of page 2 to line 9 of page 3 and in lines 16 -18 of page 3 of the present Application),

and the coating comprises a second powdery filler (Lantz, II teaches a combination of various particulates at Col. 3, lines 14 -15) which is a substantial absorber of wavelengths at least in the range of from 800 to 1400 nm (TiN is a

radio-adsorbent, that is, the compound adsorbs radiation in the recited region, as is admitted by Applicant on page 2, lines 14 – 16 of the present Application. Thus, the physical properties of TiN make it inherent for this compound to adsorb radiation in the recited range. That the particulates make the coating opaque and colored is taught by Lantz, II at Col. 2, lines 15 – 28 and 46 – 48 and is admitted by Applicant on page 2, lines 17 - 19)

and is free from heavy metals (if no heavy metals or materials containing heavy metals are added to the coating then no heavy metal can be present in the coating). In addition, Applicant admits on page 2, lines 24 - 26 of the present Application that titanium nitride is free of heavy metals, and as no other materials containing heavy metals are added to the matrix, it is inherent that no heavy metals are present.

Lantz II does not explicitly teach that the one security coating is provided on a first side of the substrate.

Lantz II does, however, specifically teach that the main objective of his invention is to prevent the reverse engineering of integrated circuit (IC) devices by a process of coating the IC devices with a coating that prevents visual access to the IC device (Col. 1, lines 52 – 57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Lantz II by providing for the one security coating to be applied on a first side of the substrate, where the first side is defined as the side of the substrate containing the active components

(i.e., the IC device) as it would have been obvious common sense to apply the security coating on the side of the substrate that held the device that was to be protected from reverse engineering by the security coating.

Lantz II does not explicitly teach the at least one security coating including at least two powdery fillers.

Lantz II does, however, specifically teach the use of a combination of particulate fillers in a matrix (Col. 3, lines 14 – 16 teach the addition of a combination of particulate fillers to a silica precursor resin matrix in order to obtain an opaque coating).

It, therefore, would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Lantz II by adding at least two particulate, powdered fillers to the matrix, as it was suggested to do so to obtain an opaque ceramic security coating have the desired opacity and adsorptive properties.

Referring to Claim 2: Lantz, II describes a semiconductor device, as recited above, further disclosing TiN (see Col. 2, lines 24 – 28 and 47- 48) as filler.

Referring to Claim 3: Lantz, II describes a semiconductor device, as recited above, further disclosing TiO_2 (see Col. 2, lines 24 – 28 and 57 – 59) as filler.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,258, 334 (Lantz, II) in view of United States Patent No. 4,243,427 (DiBugnara).

Lantz, II describes a semiconductor device, as recited above, except for disclosing wherein the matrix of the security coating comprises mono-aluminum-phosphate.

DiBugnara teaches the use of mono-aluminum-phosphate as a component in the formation of a stable glass coating over a silicon-based semiconductor device (Col. 4, lines 8-9 and 50 – 53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Lantz, II by providing for a security coating wherein the matrix of the security coating comprised mono-aluminum-phosphate because mono-aluminum-phosphate was a known ingredient for the preparation of a glassy coating for an electronic device and to obtain the advantage of providing a glassy protective coating over a semiconductor.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,258, 334 (Lantz, II) in view of United States Patent No. 4,243,427 (DiBugnara) and further in view of United States Patent No. 6,144,106 (Bearinger *et al.*).

The proposed device of Lantz, II and DiBugnara discloses a semiconductor device, as recited above, except for explicitly disclosing wherein the security coating has a thickness of less than 3 microns.

Bearinger *et al.* teach wherein the security coating has a thickness of less than 3 microns (Col. 2, line 39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Lantz, II by providing for the security coating having a thickness of less than 3 microns because it was known to do so, and, in addition, to obtain the advantage of having a device that was as thin as possible.

4. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,258, 334 (Lantz, II) in view of United States Patent No. 5,053,992 (Gilberg *et al.*).

Referring to Claim 6: Lantz, II discloses a semiconductor device, as recited above, except for specifically disclosing a light-sensitive element and an element containing data, which elements are covered by a security coating and which light-sensitive element, if the coating is damaged, will react to incident light by inducing a permanent change of state of the element containing data.

Gilberg *et al.* disclose a light-sensitive element (Figure 2 (42)) and an element containing data (see Col. 2, line 58, for example and Figure 1 (10)), which elements are covered by a security coating (Figure 1 (14) and Col. 2, lines

59 - 60) and which light-sensitive element, after the coating is damaged, will react to exposure to visible light by inducing a permanent change of state of the element containing data (Col.1, lines 29 - 34 and Col. 3, lines 31 - 43).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device taught by Lantz II by combining the tamper-proof coating for an electronic with the light-sensitive element requiring a security coating and an element containing data that would be permanently changed upon damaging of the coating, as taught by Gilberg *et al.*, to obtain the advantage of "preventing inspection of secret data that is stored" in the element (Gilberg *et al.*, Col. 1, lines14-16).

Referring to Claim 7, Lantz II disclose all of the limitations as recited in Claim 1 (please note that the limitations unique to Claim 7 are in bold for ease of reading).

Lantz II does not specifically disclose a light-sensitive element and an **electronically programmable** element containing data, which elements are covered by a security coating and which light-sensitive element, after damaging of the coating, reacts to exposure to visible light by inducing **erasure of the data and by bringing the electrically programmable element into a non-programmable state** of the element containing data.

Gilberg *et al.* disclose a memory element containing data (Figure 1 (10) and Col. 1, line 30). Gilberg *et al.* also disclose that a light sensitive memory element will be damaged when its protective coating is damaged because the light sensitive memory element reacts to exposure to visible light by inducing

erasure (or elimination) **of the data** (Col. 3, line 40 - 41, for example), **which** brings **the electrically programmable element into a non-programmable state** (Col. 3, line 44 - 47).

Although Gilberg *et al.* do not specifically disclose that the memory element is electronically programmable, this feature is taken to be an inherent function of an electronic memory element, in that was well known by those of ordinary skill in the art at the time the invention was made that programming an electronic element by electronic means (using software, for example) is the only way to program an electronic element.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the tamper-proof coating for an electron device taught by Lantz II with the light-sensitive element and the data containing, memory element as taught by Gilberg *et al.*, to obtain the advantage of protecting sensitive data by permanently damaging or destroying the data and by preventing reprogramming of the programmable element.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,258, 334 (Lantz, II) in view of United States Patent No. 5,053,992 (Gilberg *et al.*), further in view of United States Patent No. 5,892,661 (Stafford *et al.*).

The propose device of Lantz, II and Gilberg *et al.* discloses a semiconductor device, as recited above, except for specifically disclosing that the device is functioning as a smartcard.

Stafford *et al.* specifically disclose a smartcard requiring a protective coating (Col. 5, lines 50- 55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the proposed device taught by Lantz II and Gilberg *et al.* by combing it with the smartcard device as taught by Stafford *et al.* to obtain the advantage of having the sensitive data contained in the smartcard protected against permanent damage and destruction, and wherein the programmable element of the smartcard is protected against reprogramming. In addition, although the word "smartcard" was not explicitly used in the teachings of the proposed device of Lantz, II and Gilberg *et al.*, it is common sense to recognize that the proposed device of Lantz, II and Gilberg *et al.* encompassed what is now commonly referred to as a smartcard.

Response to Arguments

6. Applicant's arguments presented in Paper No. 9, filed March 21, 2002 have been fully considered but have been found not persuasive.

Claims 1 – 8 are again rejected (see above for details of the rejection).

Applicant argues that the required at least 0.3 difference in refractive index (RI) between the first filler and the matrix is not submitted prior art on the part of Applicant. The following quotes, or paraphrases, are taken from the present Application:

- page 2, last two lines -- " . . . it was found that the difference between the refractive index of the first filler and that of the matrix should at least be 0.3", and
- page 3, starting on line 1 -- " . . . the refractive index of a matrix is generally of the order of 1.4 – 1.5, [thus] first fillers with a refractive index larger than 1.7 – 1.8 can be used. Examples of such first fillers include oxides of . . . titanium . . . ", Applicant then states that the first filler comprises titanium oxide, and further on
- page 3, starting on line 16, Applicant states that the material of the matrix of the coating can be prepared from a silica precursor resin.

The above information, taken from the present Application, constitutes a set of facts. Properties, such as RI, are inherent to the materials that possess those properties. Inherent properties are a result of the chemistry and physics of a particular material. Applicant admits to the inherent properties of the materials of concern.

Applicant admits to the fact that the RI of titanium oxide is such that the difference between it (i.e., the RI of titanium oxide) and the RI of one of the disclosed matrix materials, such as silica precursor resin, is 0.3.

Lantz II teaches a coating comprising a silica precursor resin (Col. 1, line 60), the use of titanium oxide as filler (Col. 2, line 59), and the use of titanium nitride as filler (Col. 2, lines 47 – 48).

"To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. USA v. Monsanto Co.*, 948 F. 2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). MPEP 2131.02 III. The MPEP continues, "Note that as long as there is evidence of record establishing inherency, failure of those skilled in the art to contemporaneously recognize an inherent property, function, or ingredient of a prior art reference does not preclude a finding of anticipation." *Atlas Powder Co. v. IRECO, Inc.,* 190 F.3d 1342, 1349, 51 USPQ2d 1943, 1948 (Fed. Cir. 1999).

Applicant states that when titanium oxide is used as the first filler and silica precursor resin is used to prepare the matrix, the difference between the first filler and the matrix will be of the order of 0.3, as required by the present invention. Lantz II likewise discloses the use of silica precursor resin to prepare the matrix and the use of titanium oxide as filler. Therefore, the difference in refractive index between the matrix and filler as taught by Lantz II must be of the order of 0.3.

If the combination of two materials, such as titanium oxide and a silica precursor resin, result in a specific property, then it does not matter who uses that specific combination -- the resulting specific property will be the same. That is, the properties intrinsic to titanium oxide and silica precursor resin that result in

a 0.3 difference in refractive index between the matrix prepared from the silica precursor resin and the titanium oxide used as a filler, necessarily mean that the resulting property (i.e., the 0.3 difference in refractive index) is also inherent.

It is not necessary for a reference to teach or suggest a property that is inherent.

The rejection stands.

Conclusion

Any inquiry concerning this communication should be directed to Patricia Costanzo at 703 305-5675 on Monday – Friday from 8:00 A.M. – 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful Supervisory Primary Examiner Tom Thomas can be reached at 703 308 -2772.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist at 703 308-0956.

Using facsimile machines to transmit correspondence is encouraged. The official Technical Center 2800 before-final FAX number is 703-872-9318 and the after-final FAX number is 703-872-9319. These FAX numbers will provide the FAX sender with an auto-reply verifying receipt of their FAX by the United States Patent and Trademark Office. If there should be a problem while faxing to the Office, please contact Technical Center 2800 Customer Service at 703-306-3329.

Tom Thomas

TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

pmc
May 28, 2002